TECHNICAL Practice

TELECOM SOLUTIONS FOR THE 21ST CENTURY

CTG-2

Advanced Clock Controlled Tone / Message Generator and Master Clock

December 28, 2011

Add Master Clock Controlled CD Quality Tones or Messages and Emergency Tones to Your Paging System

Viking's model **CTG-2** is an advanced clock controlled tone/message generator designed to provide accurately timed tones and/or messages over your existing paging system. This provides a cost effective way of signaling school period changes, factory shifts, breaks, lunch periods, etc. The **CTG-2** has four programmable trigger inputs which are ideal for triggering emergency alert tones/messages to indicate fire evacuation, severe weather, lock down, all clear or can be used in store caster applications for "customer service required" announcements, etc. The **CTG-2** can also be used as a master clock to synchronize **Viking CL Series** wireless clocks (see **DOD# 466**).

The **CTG-2** comes equipped with up to 6 minutes of CD quality WAV file audio storage for up to 14 different tone/messages. The unit is factory loaded with common school, business and factory tones but can be programmed with your custom tones/messages or updated from the list of Wav files from the Viking web site.

The **CTG-2** can be programmed with up to 14 schedules and up to 1,000 events allowing you to program an entire year or multiple years of schedules in advance. Once programmed you can change the **CTG-2**'s schedules or turn the unit on or off remotely from any touch tone phone. The **CTG-2**'s extremely accurate time base can be manually synchronized, synchronized with 50 or 60 Hz power or can be programmed to periodically synchronize to the Atomic clock via its internal modem.

The **CTG-2** comes with programming software and a USB port to allow PC programming of timed events, schedules, Atomic clock synchronization, wave file download, message volume, day light savings time, leap year, auxiliary relay control, etc.

Features

- Up to 14 Schedules and up to 1,000 Events
- 6 minutes of CD quality WAV file record time
- Up to 14 different tones or messages
- 4 programmable trigger inputs for emergency tones, etc.
- Automatic Day Light Savings Time and leap year correction
- Programmable Atomic Clock synchronization
- USB PC programming software included
- RS485 clock SYNC terminals for remote Master Clock control of **Viking CL Series** RF synchronized clocks
- Non-volatile memory with 4 hour clock back up
- Factory loaded with school/factory tones and evacuation signals (ANSI S3.41), etc.
- Remote phone programming for on/off, schedule changes, time sync and resetting trigger inputs
- Remote program via TCP/IP network when used with a USB over IP network hub
- Page trigger outputs (12VDC and DPDT relay)
- Programmable Auxiliary relay contacts (DPDT)
- 24 hour digital clock displays hours & minutes
- One mono line level pre-amp input and two audio outputs
- Built-in 2 watt mono audio amplifier
- Master volume control
- Programmable volume control per tone/message
- Time base selection: Atomic clock, 50/60Hz or internal
- Programmable message repeat count for trigger inputs

Applications

- Signal the beginning and end of class periods, breaks and lunch periods for schools
- Signal the beginning and end of shifts, breaks and lunch periods for factories/businesses
- Provide trigger controlled emergency alert messages for fire, flood, severe weather, lock down, etc.
- Provide messages at specific times for store sales, promotions, closing times, airport loading zones, etc.
- Provide Auxiliary contact activation at specific times for specific durations for controlling lights, cameras, unlocking doors/gates, etc.
- The **CTG-2** can also be used as a Master Clock to synchronize **Viking CL Series** wireless clocks (**DOD# 466**)

Specifications

Internal Clock Backup Time: 4 hours
Power: 120V AC/13.8V AC 1.25A UL listed adapter provided, max current draw: 650mA
Dimensions: 210mm x 159mm x 45mm (8.25" x 6.25" x 1.75")
Weight: 1.5 Kg (3.2 lbs)
Environmental: 0°C to 32°C (32°F to 90°F) with 5% to 95% non-condensing humidity
Preamp (Audio 1/2) Output: 6V RMS across 600 ohms
Paging Amplifier Output: 2 watts - powers up to (3) 8 ohm or (16) 45 ohm speakers
Sound Pressure: 100 dB @ 1 meter (loud electronic warble from 25AE paging horn)
REN: 0.0 B
Maximum Speaker Output Wire Run: 91m (300 ft), 18 AWG
Maximum Load on Page Trigger Output: 1K ohm
WAV File Resolution: 16 bit or 8 bit
WAV File Sampling Rate: 44.1K, 22K or 11K
Time Base: 50/60 Hz or internal with atomic clock sync
Internal Time Base Accuracy: +/- 2ppm (63 seconds per year) without Atomic Clock Sync or manual adjustment
Connections: 31 screw terminal block positions, (1) type B USB jack

IF YOU HAVE A PROBLEM WITH A VIKING PRODUCT, PLEASE CONTACT: VIKING TECHNICAL SUPPORT AT (715) 386-8666

Our Technical Support Department is available for assistance Monday 8am - 4pm and Tuesday through Friday 8am - 5pm central time. So that we can give you better service, before you call please:

1. Know the model number, the serial number and what software version you have (see serial label).
2. Have your Technical Practice in front of you.
3. It is best if you are on site.

RETURNING PRODUCT FOR REPAIR

The following procedure is for equipment that needs repair:

1. Customer must contact Viking's Technical Support Department at 715-386-8666 to obtain a Return Authorization (RA) number. The customer MUST have a complete description of the problem, with all pertinent information regarding the defect, such as options set, conditions, symptoms, methods to duplicate problem, frequency of failure, etc.
2. Packing: Return equipment in original box or in proper packing so that damage will not occur while in transit. Static sensitive equipment such as a circuit board should be in an anti-static bag, sandwiched between foam and individually boxed. All equipment should be wrapped to avoid packing material lodging in or sticking to the equipment. Include ALL parts of the equipment. C.O.D. or freight collect shipments cannot be accepted. Ship cartons prepaid to: **Viking Electronics, 1531 Industrial Street, Hudson, WI 54016**
3. Return shipping address: Be sure to include your return shipping address inside the box. We cannot ship to a PO Box.
4. RA number on carton: In large printing, write the R.A. number on the outside of each carton being returned.

RETURNING PRODUCT FOR EXCHANGE

The following procedure is for equipment that has failed out-of-box (within 10 days of purchase):

1. Customer must contact Viking's Technical Support at 715-386-8666 to determine possible causes for the problem. The customer MUST be able to step through recommended tests for diagnosis.
2. If the Technical Support Product Specialist determines that the equipment is defective based on the customer's input and troubleshooting, a Return Authorization (R.A.) number will be issued. This number is valid for fourteen (14) calendar days from the date of issue.
3. After obtaining the R.A. number, return the approved equipment to your distributor, referencing the R.A. number. Your distributor will then replace the product over the counter at no charge. The distributor will then return the product to Viking using the same R.A. number.
4. **The distributor will NOT exchange this product without first obtaining the R.A. number from you. If you haven't followed the steps listed in 1, 2 and 3, be aware that you will have to pay a restocking charge**.

LIMITED WARRANTY

Viking warrants its products to be free from defects in the workmanship or materials, under normal use and service, for a period of one year from the date of purchase from any authorized Viking distributor or 18 months from the date manufactured, which ever is greater. If at any time during the warranty period, the product is deemed defective or malfunctions, return the product to Viking Electronics, Inc., 1531 Industrial Street, Hudson, WI., 54016. Customer must contact Viking's Technical Support Department at 715-386-8666 to obtain a Return Authorization (R.A.) number.

This warranty does not cover any damage to the product due to lightning, over voltage, under voltage, accident, misuse, abuse, negligence or any damage caused by use of the product by the purchaser or others. This warranty does not cover non-EWP products that have been exposed to wet or corrosive environments.

NO OTHER WARRANTIES. VIKING MAKES NO WARRANTIES RELATING TO ITS PRODUCTS OTHER THAN AS DESCRIBED ABOVE AND DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTIES OR MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

EXCLUSION OF CONSEQUENTIAL DAMAGES. VIKING SHALL NOT, UNDER ANY CIRCUMSTANCES, BE LIABLE TO PURCHASER, OR ANY OTHER PARTY, FOR CONSEQUENTIAL, INCIDENTAL, SPECIAL OR EXEMPLARY DAMAGES ARISING OUT OF OR RELATED TO THE SALE OR USE OF THE PRODUCT SOLD HEREUNDER.

EXCLUSIVE REMEDY AND LIMITATION OF LIABILITY. WHETHER IN AN ACTION BASED ON CONTRACT, TORT (INCLUDING NEGLIGENCE OR STRICT LIABILITY) OR ANY OTHER LEGAL THEORY, ANY LIABILITY OF VIKING SHALL BE LIMITED TO REPAIR OR REPLACEMENT OF THE PRODUCT, OR AT VIKING'S OPTION, REFUND OF THE PURCHASE PRICE AS THE EXCLUSIVE REMEDY AND ANY LIABILITY OF VIKING SHALL BE SO LIMITED.

IT IS EXPRESSLY UNDERSTOOD AND AGREED THAT EACH AND EVERY PROVISION OF THIS AGREEMENT WHICH PROVIDES FOR DISCLAIMER OF WARRANTIES, EXCLUSION OF CONSEQUENTIAL DAMAGES, AND EXCLUSIVE REMEDY AND LIMITATION OF LIABILITY, ARE SEVERABLE FROM ANY OTHER PROVISION AND EACH PROVISION IS A SEPARABLE AND INDEPENDENT ELEMENT OF RISK ALLOCATION AND IS INTENDED TO BE ENFORCED AS SUCH.

FCC REQUIREMENTS

This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. Inside the front panel of this equipment is a label that contains, among other information, a product identifier in the format US:AAAEQ##TXXXX. If requested, this number must be provided to the telephone company.

The REN is used to determine the number of devices that may be connected to a telephone line. Excessive REN's on a telephone line may result in the devices not ringing in response to an incoming call. In most but not all areas, the sum of the REN's should not exceed five (5.0) To be certain of the number of devices that may be connected to a line, as determined by the total REN's, contact the local telephone company. For products approved after July 23, 2001, the REN for this product is part of the product identifier that has the format US:AAAEQ##TXXXX. The digits represented by ## are the REN without a decimal point (*e.g.*, 03 is a REN of 0.3). For earlier products, the REN is separately shown on the label.

The plug used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. If your home has specially wired alarm equipment connected to the telephone line, ensure the installation of this CTG-2 does not disable your alarm equipment. If you have questions about what will disable alarm equipment, consult your telephone company or a qualified installer.

If the CTG-2 causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make the necessary modifications to maintain uninterrupted service.

If trouble is experienced with the CTG-2, for repair or warranty information, please contact:

Viking Electronics, Inc., 1531 Industrial Street, Hudson, WI 54016 (715) 386-8666

If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

Connection to Party Line Service is subject to State Tariffs. Contact the state public utility commission, public service commission or corporation commission for information.

WHEN PROGRAMMING EMERGENCY NUMBERS AND (OR) MAKING TEST CALLS TO EMERGENCY NUMBERS:

Remain on the line and briefly explain to the dispatcher the reason for the call. Perform such activities in the off-peak hours, such as early morning or late evenings.

It is recommended that the customer install an AC surge arrester in the AC outlet to which this device is connected. This is to avoid damaging the equipment caused by local lightning strikes and other electrical surges.

PART 15 LIMITATIONS

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Features Overview

Audio Output 2: Unswitched line level audio output to an extenal amplifier. For locations that do not require background music from the audio input.

Aux. Relay Output Contacts: DPDT relay contacts that can be programmed as a timed event.

Internal 2-Watt Amp Gain Control: Adjusts speaker output volume.

Aux. Relay Active LED

Secondary Aux. Relay Output Contacts: Available on J9 solder pads.

Page Trigger Output Contacts: DPDT relay contacts that activate when tones/messages are played. Used for triggering paging amplifier, etc.

Page Activity LED: Lights during tone/ message playback.

Audio Output LED: Flashes to indicate tone/ message audio output.

RS485 Clock Sync Output: For syncho-nizing time on **Viking CL Series** wireless clocks (DOD# 466).

USB LED: Lights indicating USB cable is connected to a computer.

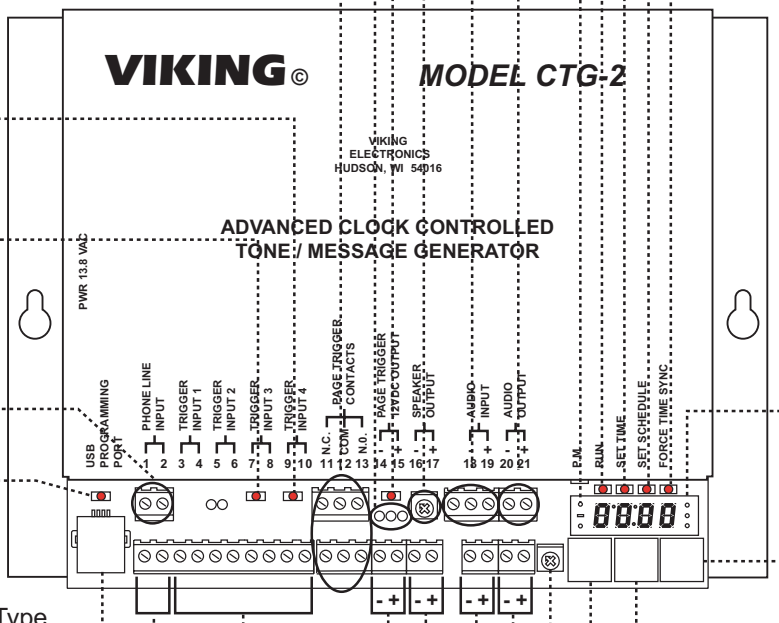
USB Programming Port: Type B USB jack for programming and uploading WAV files.

CO/Phone Line Input: Connect to an unused phone line or PABX station for atomic clock sync and/or remote touch tone programming.

Trigger Inputs 1-4: For activating programmed tones/messages. Programmable for NO, NC, momentary, continuous, alternate action or activate only.

Page Trigger 12VDC Output: Connect to paging amplifiers requiring a switched 12VDC signal for enabling the paging source input.

Speaker Output: 2 Watt maximum. Connect up to three 8-ohm speakers in parallel. This port is also useful for monitoring WAV file audio during programming.



PM LED: Lights to indicate PM time.

Run LED: Lights to indicate unit is in "RUN" (operation) mode.

Set Time LED: Lights to indicate unit is in "Set Time" mode.

Set Schedule LED: Lights to indicate unit is in "Set Schedule" mode.

Force Time Sync LED: Lights to indicate unit is ready for a manual "Force Time Sync".

LED Display: Shows clock time, schedule, force time sync, on/off modes, sync errors, system disable, etc.

Mode Switch: Press to advance through modes (run, set time, set schedule or force time sync).

Time "+" Switch: Press to advance through time, schedules, initiate a force time sync or turn unit back on.

Time "-" Switch: Press to decrement time, select schedules or turn unit off.

Master Volume: Used to adjust overall pre-amp volume level output.

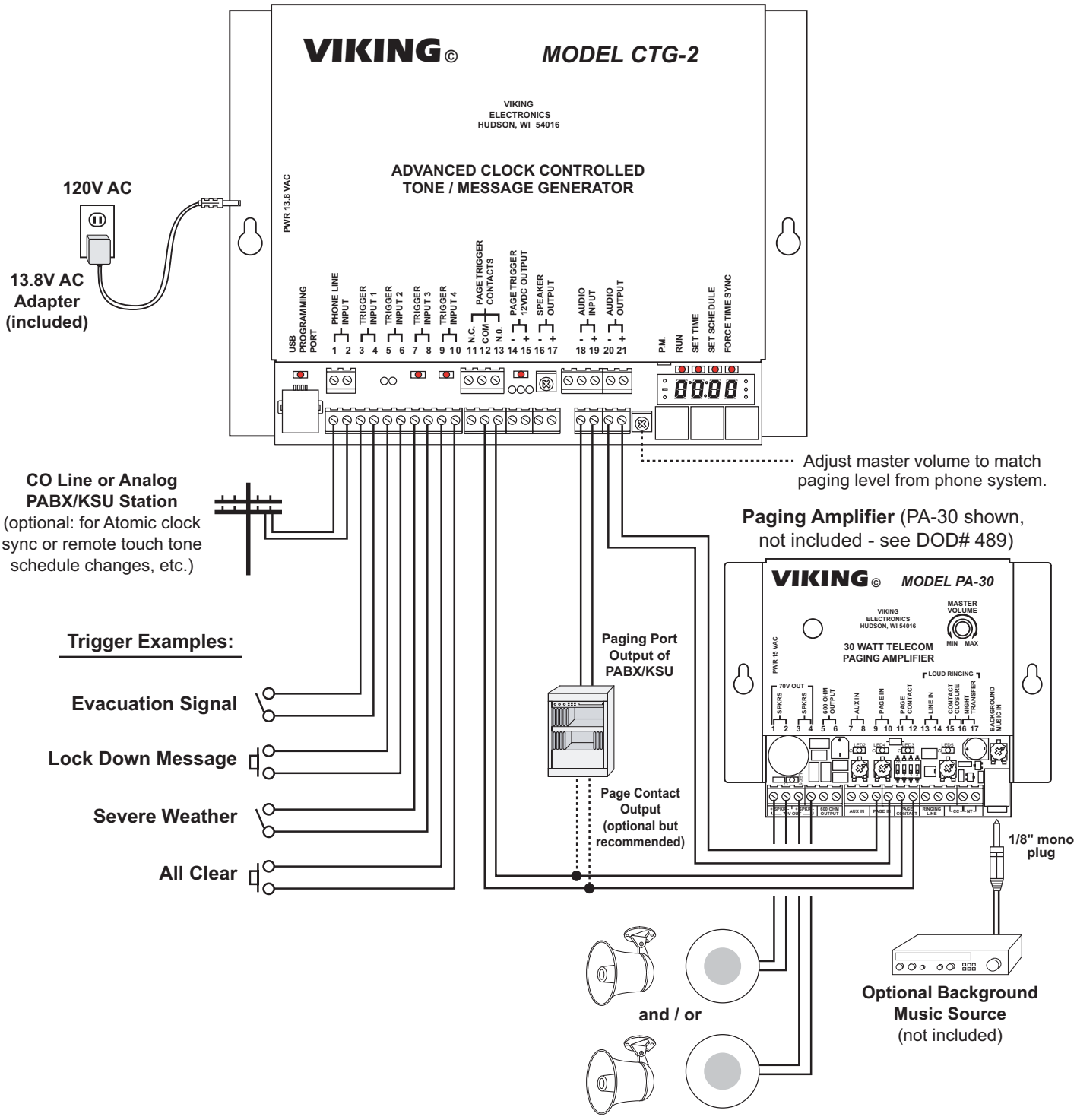
Audio Output 1: Line level audio output to external amplifier. This output is switched for use with existing paging or background music.

Audio Input: Line level pre-amp input for paging, background music, etc.

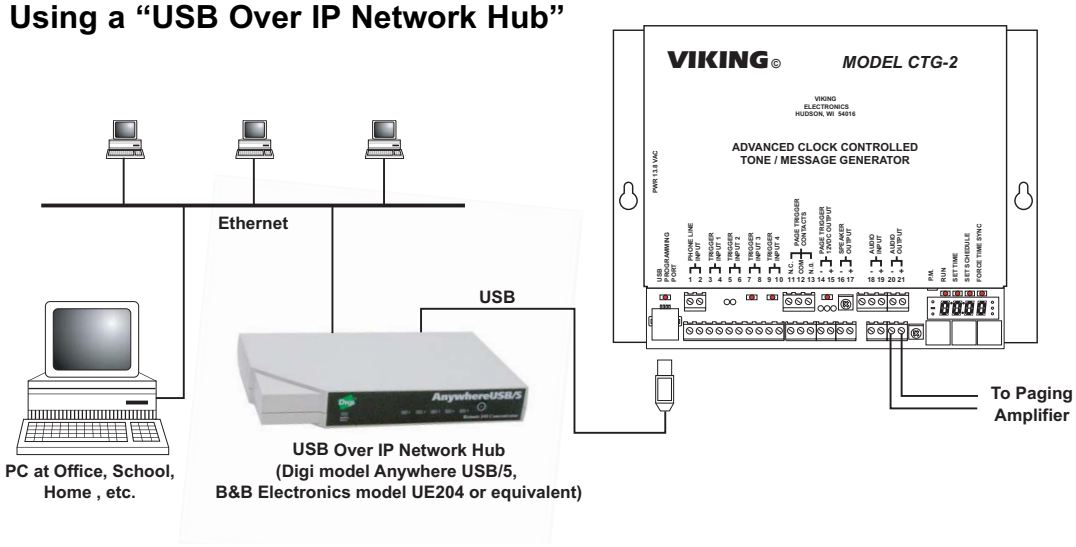
Installation

IMPORTANT: *Electronic devices are susceptible to lightning and power station electrical surges from both the AC outlet and the telephone line. It is recommended that a surge protector be installed to protect against such surges.*

A. Typical Installation Automatically Switching Paging Audio to the CTG-2 for Time Activated or Externally Triggered Messages and/or Tones

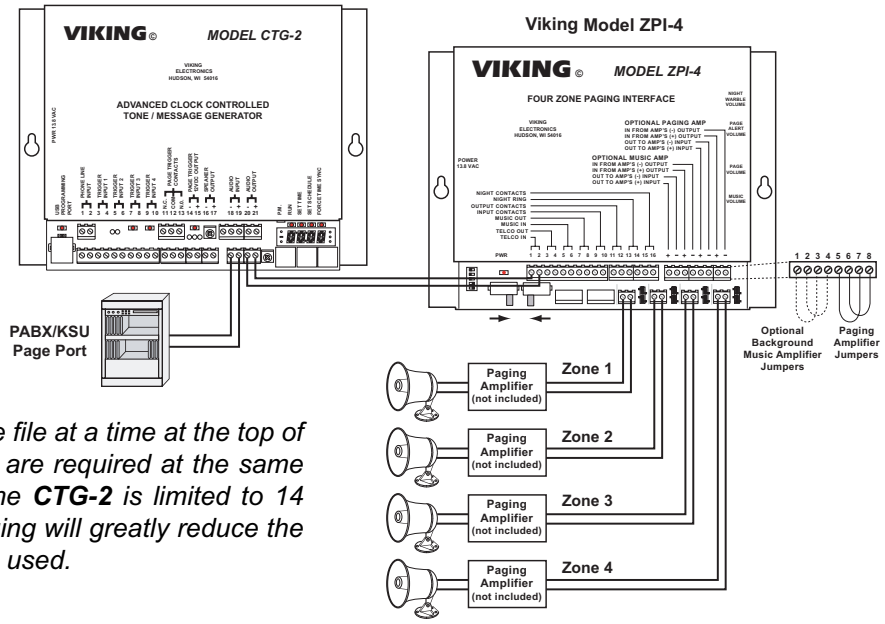


B. Remotely Program or Change Schedules on the CTG-2 from a PC Anywhere on Your IP Network by Using a "USB Over IP Network Hub"



C. Multi-Zone Paging from a Single CTG-2 When Used with a Viking Model ZPI-4

The **CTG-2** can send paging tones at different times to up to 4 different zones when used with a Viking model **ZPI-4**. Since touch tones are used to select the paging zones on the **ZPI-4**, you simply add a ½ sec touch tone wave file before each paging tone via Audacity or any other wave file audio editing software. Wave files for touch tones 0-9 are provided on the **CTG-2** installation CD. See "Creating Touch Tone Wave Files" application note, **DOD# 898**.

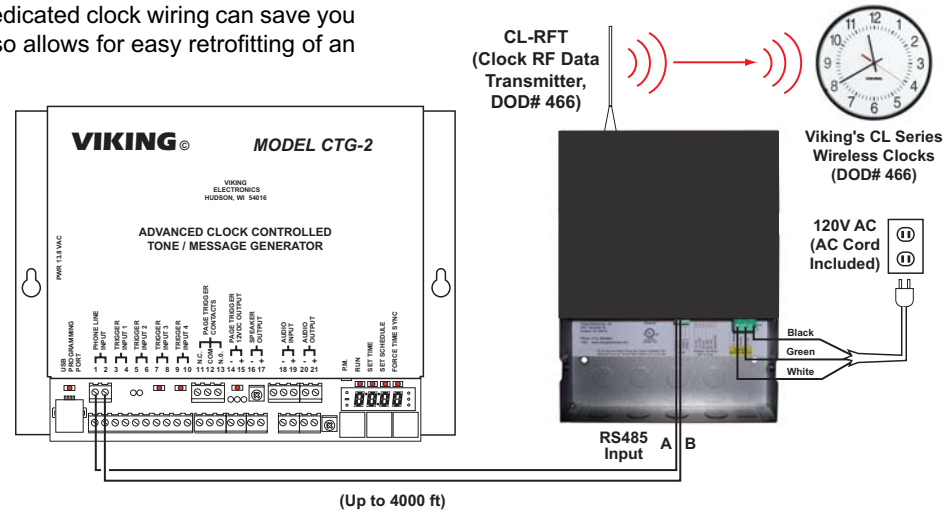


Note: *The **CTG-2** can only output one wave file at a time at the top of the minute. If multiple different page tones are required at the same time, multiple **CTG-2**'s should be used. The **CTG-2** is limited to 14 wave file memory locations. Multi-zone paging will greatly reduce the overall number of paging tones that can be used.*

D. Using the CTG-2 as a Master Clock to Automatically Synchronize Viking's CL Series Wireless Cocks

Viking's Wireless Clock System provides reliable, accurately synchronized clocks for your entire facility. Eliminating dedicated clock wiring can save you thousands of dollars on installation and also allows for easy retrofitting of an existing installation.

The system is comprised of a **CTG-2** master clock, a **CL-RFT** clock RF transmitter and Analog or Digital wireless slave clocks. Working on Viking's 915-928MHz frequency hopping technology eliminates interference with other wireless products and requires no FCC license, eliminating extraneous fees. The received signal remains strong even under the effects of noise, obstructions or long distances which tend to decrease the signal to noise ratio. Installation is a cinch for our wireless clocks, just insert the batteries or connect power and hang them. That's it.



PC Programming Definitions

ACTS Phone Number: "ACTS" is the abbreviation for "Automated Computer Time Service" provided by NIST (National Institute of Standards and Technology). The telephone number to "ACTS" for analog modem time synchronization is (303) 494-4774 (factory default in **CTG-2**).

ACTS Sync: Clicking ACTS Sync will activate a forced Atomic Clock Sync. The internal modem in the unit will seize the phone line, speed dial ACTS and download the current time and date. This process will take approximately 30 seconds. The current time and date will then be loaded into the **CTG-2** and displayed under "Clock Time". ***Note:*** *Unit must be connected to a phone line or analog phone system station port for the Atomic Clock Sync.*

Audio/CTG-2 Wave Files: Programming screen where you can Upload, Download, Erase, Set volume and message start delay for the wave files stored in the **CTG-2**.

Calendar/View Calendar: Opens the PC programming screen "Change Schedule Calendar" where you can select which schedule you would like the **CTG-2** to run on which days during the year.

Cal Err: "Cal", "Err" will flash on the clock display any time the **CTG-2** has lost power long enough to deplete its internal capacitor clock back up (approximately 4 hours) and has one or more programmed events with specific dates or daylight savings time programmed. This can be corrected with a "Forced Time Sync" (see page 14) or enter PC programming and re-program the clock in the "Set Up Clock" screen (see page 12).

Clear Com: If you are experiencing multiple error messages while manipulating features in the "CTG-2 Wave Files", select "Clear Com" and reattempt the previous programming causing the error. If this does not clear the errors, we recommend closing the program, disconnect the USB cord then reconnect the USB and reopen the program.

Conflicts/Check for Conflicts: PC programming screen where you can have the software review the programmed Events and Schedule changes in your dat file to determine date or time conflicts.

Dat File: PC data file for storing **CTG-2** programming data.

Diagnostics: This is for use by qualified Viking Technical support personnel to view firmware memory, factory clock calibration, etc.

Download: Downloads internal programming data from the **CTG-2** to the PC screen you have open.

Event Programming Screen: PC programming screen where you enter/program individual events to activate at specific times during the day, week or on specific dates.

Help File: Selecting the "Help" pull down menu and clicking on "Instructions" will open the "CTG-2 Help File". Open this file for detailed instructions on PC programming of the **CTG-2**.

Off Mode: The **CTG-2** can be placed in the "OFF" mode via push button, PC or touch tone programming. In the "Off" mode the unit will not play or activate any programming events. The unit will keep time and the 4 trigger inputs will remain functional. Unlike the "dS" (system disable) mode, in which the unit can automatically enable its self on a programmed time or date. When the unit displays "OFF" it can only be taken out of the "Off" mode manually via push button, PC or touch tone programming.

Print and Print Data: Print simply prints the current screen you are working with. Print Data prints the entire Event Programming Database in a "printer friendly" format.

Save: Saves changes to the current open screen, to the PC dat file.

Security Code: This is a programmable 6 digit touch tone code for entering remote touch tone programming. This code is to be entered after the **CTG-2** has answered the line and given a confirmation beep.

Snc Err: "Snc", "Err" will flash on the clock display when the **CTG-2** is unable to synchronize with the "ACTS". If this happens, check to make sure a phone line or analog station port of a phone system is connected to J2 terminals 1&2 (CO Line Input). Test the phone line with a standard telephone or test set to verify you can call ACTS and hear modem carrier tones. Then go into PC programming under "Set Up Clock" and verify the correct number is programmed in the "ACTS Phone Number" location.

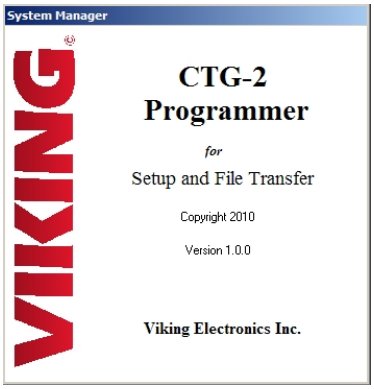
System Disable: This task allows you to program a specific date and/or time to disable all timed events. This is useful in schools for disabling all events during spring break, holidays, etc. Triggered inputs 1-4 will remain functional during "System Disable" times.

System Requirements

- IBM compatible personal computer with:
  - Windows 2000 (service pack 4 or higher)
  - Windows XP (service pack 2 or higher)
  - Windows Vista (SP2 or newer), 32 or 64 bit versions
  - Windows 7
  - Adobe Acrobat Reader 8 or higher
- **CTG-2** hardware
- Available USB port
- USB Type-A to Type-B cable (provided with **CTG-2** hardware)
- 60MB minimum free hard drive space for installation
- 8MB of free physical RAM

PC Programming

ATTENTION: Before connecting the CTG-2 to your PC, CTG2 application software must be installed.



A CD ROM is included with each **CTG-2**. The CD contains the application CTG2 used to program the unit using a PC running Windows 2000, XP, Vista or Windows 7 (see System Requirements, page 5). Install the application on your PC by placing the CD ROM into your PC's drive. Click "I Accept" on the bottom of the first screen, then select "CTG-2" and click the "Install" button. Follow the directions on the screen. When installation is completed, be sure to restart the computer. If you are reinstalling CTG2 software you must uninstall the original version first via "Add and Remove Programs". To start the CTG2 application, click on the CTG2 icon on your desk top. The Main screen will appear, allowing the user to create new **CTG-2** files.

IMPORTANT: YOU MUST INSTALL A USB DRIVER BEFORE THE PC SOFTWARE CAN BE USED TO PROGRAM THE CTG-2.

Automatically Installing USB Drivers: Connect the **CTG-2** to an unused USB port on your PC. "Found Viking Electronics CTG-2" should pop up, then a few seconds later "Your new hardware is installed and ready to use" should pop up. You can now click on the CTG-2 icon and begin programming. ***Note:*** *If the driver did not automatically install as explained above, see driver installation instructions below.*

Manually Installing USB driver on Windows XP: Connect the **CTG-2** to an unused USB port on your PC. A Windows "Found New Hardware Wizard" should appear. Select "No, not this time" then click "Next". Select "Install the software automatically" then click "Next". If Hardware Installation Warning (has not passed logo testing…) pops up, click "Continue Anyway" then click "Finish". ***Note:*** *if you have problems installing the driver software automatically follow the steps below.* Connect the **CTG-2** to an unused USB port on your PC. A Windows "Found New Hardware Wizard" should appear. Select "No, not this time" then click "Next". Select "Install from a list or specific location" then click "Next". Direct the wizard to the CTG-2 driver folder found in the root directory of the CTG-2 application. Usually this is "C:\program files\viking\ctg-2\drivers" then click "Next". If Hardware Installation Warning (not passed logo testing…) pops up, click "Continue Anyway" then click "Finish".

Manually Installing USB driver on Windows Vista: Connect the **CTG-2** to an unused USB port on your PC. A Windows "Found New Hardware" screen should appear. Click on "Locate and install driver software". A screen stating "Insert the disc that came with your Viking CTG-2" should appear. Click on "I don't have the disc show me other options". A screen stating "Windows couldn't find driver software for your device" should appear. Click "Browse my computer for driver software". A screen stating "Browse for driver software on your computer" should appear. Direct the browser to the CTG-2 driver folder found in the root directory of the CTG-2 application. Usually this is "C:\program files\viking\ctg-2\drivers" then click "Next". A Windows security screen may appear, click on "Install this driver software anyway". ***Note:*** *To open the CTG-2 Programmer software for the first time on the Windows Vista PC, right click on the "CTG-2 Programmer" icon and select "Run as administrator".*

To start the **CTG-2** application, click on the **CTG-2** Programmer icon on your desk top. The Event Programming screen will appear that allows the user to enter/program individual events to activate at specific times during the day, week or on specific dates. Events include: Play specific Wave file, Enable or Disable the system, Activate Time Sync, Turn Aux Relay On/Off, Activate programmable timed Aux Relay and Change Schedule on specific dates. The Event Programming example shown on page 8 is included on the CD ROM and factory loaded into the **CTG-2** allowing you to get familiar with programming or modify this file for your own use.

Programming Steps: The **CTG-2** should be programmed in the following order.

1. Create any unique wave file sounds or messages required for your application. The **CTG-2** is factory loaded with common school and factory shift change sounds.

2. In the "File" pull down menu click "New File" and enter a name for your dat file and unit.

3. Click on "Audio" and upload the wave files into the **CTG-2**.

4. Program your events line by line in the "Event Programming" screen. Entering the events in chronological order is helpful during programming but not required as you can select "Sort Events" when you have finished.

5. Check for any programming conflicts by clicking on the "Conflicts" button.

6. Program the Time and Date in the "Set Up Clock" screen.

7. Program Triggers 1 - 4 to play your desired wave sounds.

8. If more than one schedule has been programmed, click on "Calendar" to open the "Change Schedule Calendar" screen and select the dates that you would like to run each schedule.

9. Save your programming changes and upload the dat file to the **CTG-2**.

10. Exit the programming software and run a specific schedule or select "Calendar Mode" to have the unit automatically switch schedules at 12:00 AM on your programmed dates.

Note: *The data in the "Notes" field is not used by the **CTG-2** and is only stored in the dat file for the convenience of the user. If the dat file is lost and a download is performed, all "Notes" will be blank.*

A. Downloading WAV Files (optional)

The **CTG-2** comes factory loaded with 14 CD quality tones and emergency sounds commonly used in school and factory applications. The **CTG-2** can be uploaded with any user edited WAV file sounds or messages. See “WAV File Guidelines” below.

WAV File Guidelines:

1. For best results, the WAV file should be 16 bit / 44.1K / mono.

2. Resolution down to 8 bits is acceptable but audio quality will not be optimal.

3. Sampling rates of 22k and 11k are also acceptable.

4. The WAV file may be stereo or multi-channel, but only the Left Channel will be loaded.

5. Each of the 14 Memory Locations can hold up to 26 seconds of recorded audio (at 11k sample rate).

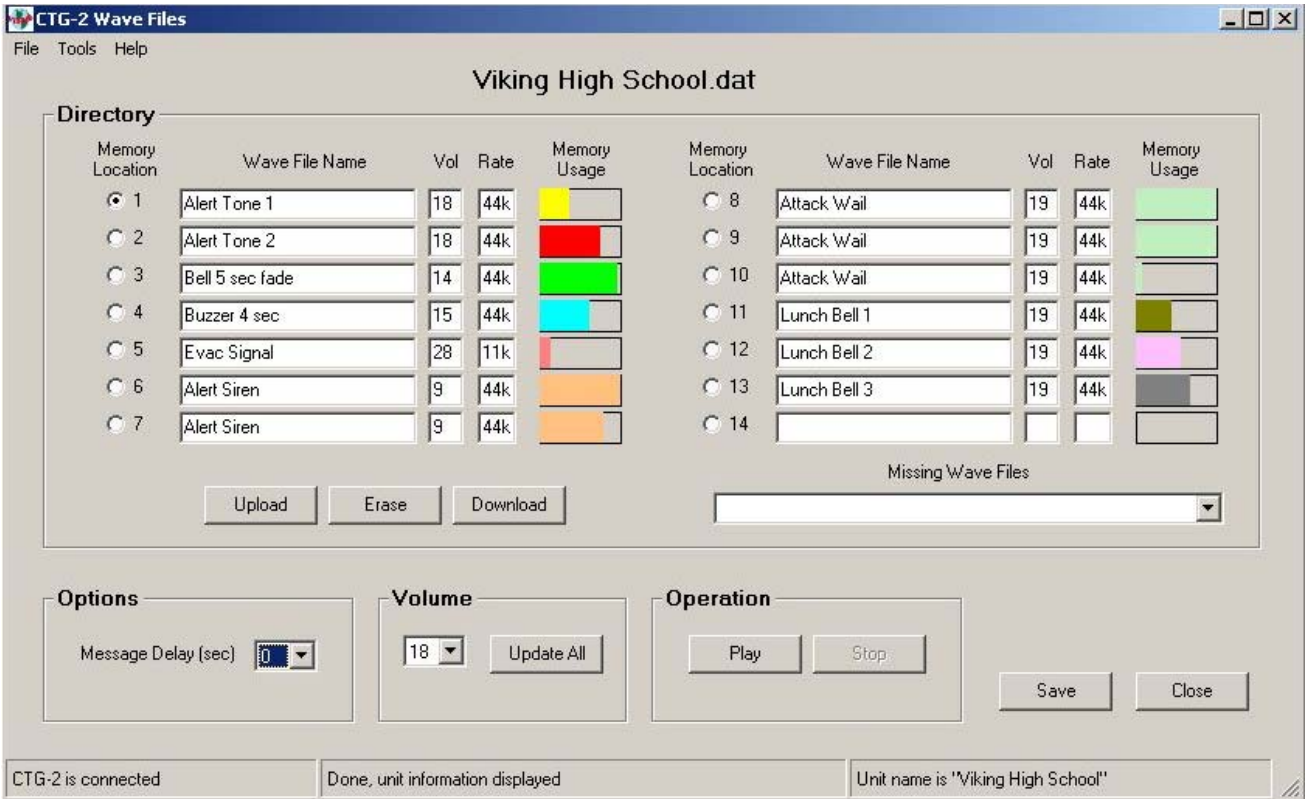
6. Total recording time of 6 minutes 15 seconds available (at 11k sample rate).

7. Longer recordings are allowed to spill over into additional memory locations.

Note: *If you create custom WAV files and load them in the* ***CTG-2****, keep a backup copy of these custom WAV files. Burn a copy of your WAV files to a CD or copy them to a USB memory stick. If there is a catastrophic failure of the PC used to program the* ***CTG-2****, these backup copies of the WAV files can be used to reload the original WAV files back into the* ***CTG-2****, so all audio features can still be used. See* ***DOD# 899 “Capture All Data from the CTG-2 and Use the Currently Loaded Wave Files.”*** *Applications such as Sound Forge, Audacity, and Windows Sound Recorder can be used to generate WAV files out of Audio CD and/or MP3 audio recordings.*

B. Uploading WAV Files to the CTG-2

CTG-2 Wave Files: Clicking the “Audio” button in the “Event Programming” screen will open the “CTG-2 Wave Files” programming screen where you can Upload, Download, Erase, Set volume and message start delay for the wave files stored in the **CTG-2**.



Message Delay (sec): Adjustable from 0 to 9 seconds in half sec increments. This is the delay from when the page trigger output is activated until the start of the wave file is played. Adjusting this can eliminate cutting off the first section of the wave file in applications where certain paging amplifiers require a second or two to power up and/or switch to that audio source.

Memory Usage: The **CTG-2**'s wave file memory storage is separated into 14 memory blocks and is displayed after each wave file name under the column titled "Memory Usage". The memory blocks will fill with color after uploading a wave file showing how much memory space was required for that file. Larger wave files will require multiple memory blocks. To conserve memory storage space you can reduce the sampling rate of the wave file from 44K to 22K or 11K. Note: Reducing the sampling rate will decrease the sound quality of the message/sound.

Missing Wave Files: If the **CTG-2** does not have a wave file in its internal memory that is required by the PC dat file you have open, "Missing Wave Files will be highlighted in red. To upload the missing wave file to the **CTG-2**, open the drop down menu and click on the missing wave file. The file will then be automatically uploaded to the **CTG-2**.

Volume: The "Volume" drop down menu allows you to adjust and set the volume level of each individual wave file. This is useful for matching the volume levels of each wave file or increasing the volume on specific wave files such as evacuation sirens, etc. ***Note:*** *Volume cannot be changed by clicking on the volume field next to the wave file name. Select the memory location you would like to change and alter the volume using the "Volume" drop down in "Operation".*

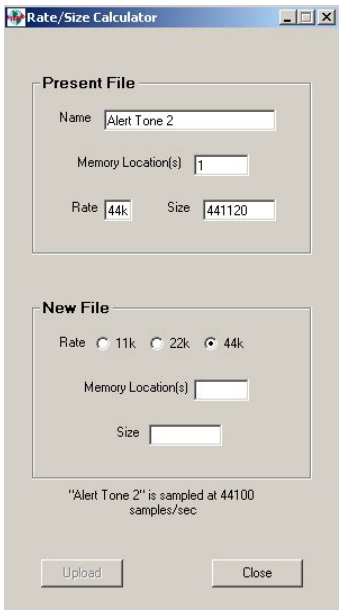
Load All: In the "Tools" drop down menu, selecting "Load All" will upload all the wave files from the currently open "CTG2 Wave Files" screen into the correct memory locations in the **CTG-2**. ***Note:*** *To load all the wave files from the currently open dat file, click "Open" in the "File" drop down menu, then select "Load All" from the "Tools" drop down menu. The **CTG-2** programmer software will then automatically erase and upload each wave file memory location in the **CTG-2**.*

Erase All: In the "Tools" drop down menu, selecting "Erase All" will erase all 14 wave file memory locations in the **CTG-2**.

Save Vol: After adjusting the wave file volume levels (adjusted volume settings will be highlighted in red) select "Save Vol" to save the volume settings for all wave files.

Play: Clicking on "Play" will signal the **CTG-2** to play the selected wave file. This is useful for setting the volume levels for each wave file.

Change Rate: In the "Tools" drop down menu, clicking on "Change Rate" opens the "Rate/Size Calculator" which allows you to reduce the sampling rate of the selected wave file to reduce the memory storage capacity needed. ***Note:*** *It is not possible to reduce the rate of a file occupying only one block.* (right) ***Caution:*** *The "Rate/Size Calculator" can only be used to reduce a wave file's sampling rate. To increase the sampling rate, the wave file must be erased and reloaded.*



Troubleshooting Communication Errors

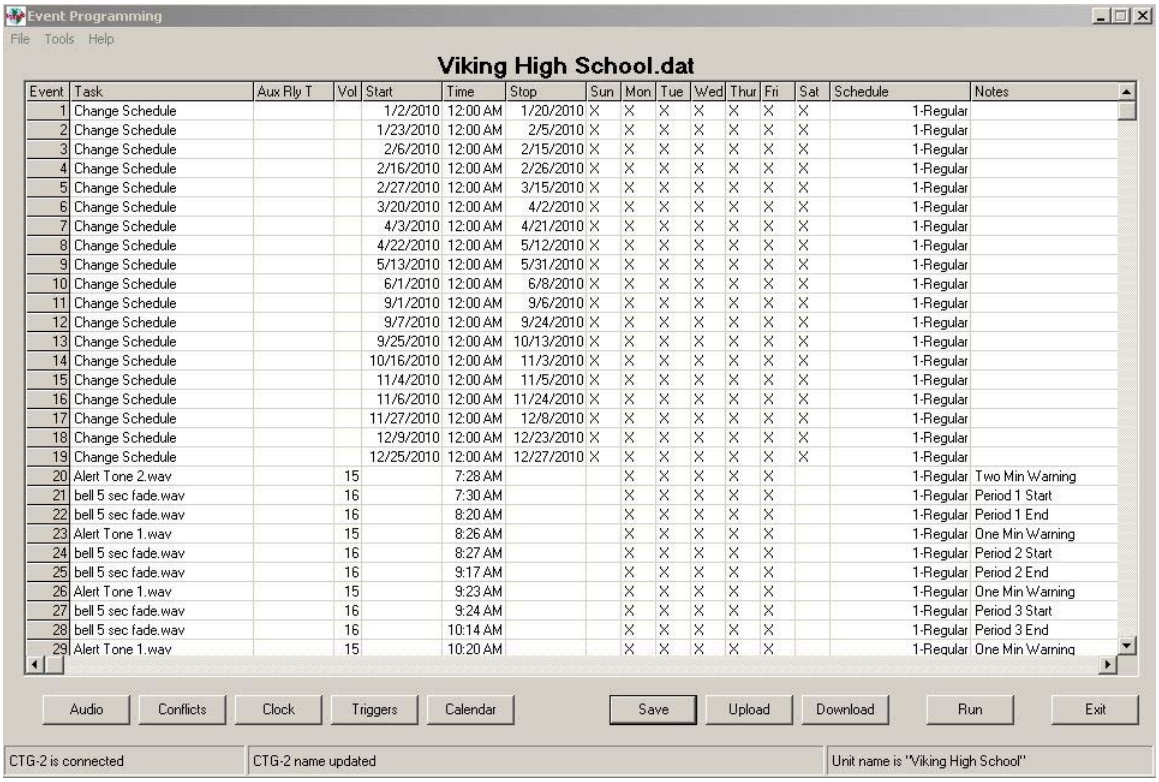
1. If the USB status LED goes off while you are connected to the **CTG-2**, communication between the PC and **CTG-2** has been lost. Close the PC software, unplug the USB cable from the **CTG-2** and power down the **CTG-2**. Reconnect power, plug the USB cable back in and open the PC software again. Communication should be re-established.

2. If you open the PC software with a **CTG-2** connected, occasionally a communications error will occur between the PC and the **CTG-2** and a message will pop up saying the **CTG-2** is missing some of its wave files, when they are not missing. If you get this type of error message, close the software and re-open it.

3. If the **CTG-2** displays "Pro" when the PC software is not open, momentarily power down the **CTG-2** and the display should clear.

4. If you open the PC software and a message says: "error on directory position 15", close the PC software and power down the **CTG-2**. Reconnect power and open the PC software again.

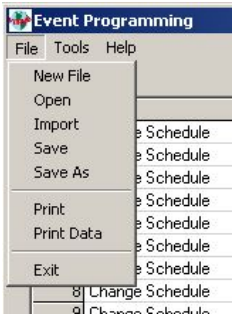
C. Event Programming



Event	Task	Aux Rly T	Vol	Start	Time	Stop	Sun	Mon	Tue	Wed	Thur	Fri	Sat	Schedule	Notes
1	Change Schedule			1/2/2010	12:00 AM	1/20/2010	X	X	X	X	X	X	X	1-Regular	
2	Change Schedule			1/23/2010	12:00 AM	2/5/2010	X	X	X	X	X	X	X	1-Regular	
3	Change Schedule			2/6/2010	12:00 AM	2/15/2010	X	X	X	X	X	X	X	1-Regular	
4	Change Schedule			2/16/2010	12:00 AM	2/26/2010	X	X	X	X	X	X	X	1-Regular	
5	Change Schedule			2/27/2010	12:00 AM	3/15/2010	X	X	X	X	X	X	X	1-Regular	
6	Change Schedule			3/20/2010	12:00 AM	4/2/2010	X	X	X	X	X	X	X	1-Regular	
7	Change Schedule			4/3/2010	12:00 AM	4/21/2010	X	X	X	X	X	X	X	1-Regular	
8	Change Schedule			4/22/2010	12:00 AM	5/12/2010	X	X	X	X	X	X	X	1-Regular	
9	Change Schedule			5/13/2010	12:00 AM	5/31/2010	X	X	X	X	X	X	X	1-Regular	
10	Change Schedule			6/1/2010	12:00 AM	6/8/2010	X	X	X	X	X	X	X	1-Regular	
11	Change Schedule			9/1/2010	12:00 AM	9/6/2010	X	X	X	X	X	X	X	1-Regular	
12	Change Schedule			9/7/2010	12:00 AM	9/24/2010	X	X	X	X	X	X	X	1-Regular	
13	Change Schedule			9/25/2010	12:00 AM	10/13/2010	X	X	X	X	X	X	X	1-Regular	
14	Change Schedule			10/16/2010	12:00 AM	11/3/2010	X	X	X	X	X	X	X	1-Regular	
15	Change Schedule			11/4/2010	12:00 AM	11/5/2010	X	X	X	X	X	X	X	1-Regular	
16	Change Schedule			11/6/2010	12:00 AM	11/24/2010	X	X	X	X	X	X	X	1-Regular	
17	Change Schedule			11/27/2010	12:00 AM	12/8/2010	X	X	X	X	X	X	X	1-Regular	
18	Change Schedule			12/9/2010	12:00 AM	12/23/2010	X	X	X	X	X	X	X	1-Regular	
19	Change Schedule			12/25/2010	12:00 AM	12/27/2010	X	X	X	X	X	X	X	1-Regular	
20	Alert Tone 2.wav		15		7:28 AM			X	X	X	X	X		1-Regular	Two Min Warning
21	bell 5 sec fade.wav		16		7:30 AM			X	X	X	X	X		1-Regular	Period 1 Start
22	bell 5 sec fade.wav		16		8:20 AM			X	X	X	X	X		1-Regular	Period 1 End
23	Alert Tone 1.wav		15		8:26 AM			X	X	X	X	X		1-Regular	One Min Warning
24	bell 5 sec fade.wav		16		8:27 AM			X	X	X	X	X		1-Regular	Period 2 Start
25	bell 5 sec fade.wav		16		9:17 AM			X	X	X	X	X		1-Regular	Period 2 End
26	Alert Tone 1.wav		15		9:23 AM			X	X	X	X	X		1-Regular	One Min Warning
27	bell 5 sec fade.wav		16		9:24 AM			X	X	X	X	X		1-Regular	Period 3 Start
28	bell 5 sec fade.wav		16		10:14 AM			X	X	X	X	X		1-Regular	Period 3 End
29	Alert Tone 1.wav		15		10:20 AM			X	X	X	X	X		1-Regular	One Min Warning

Connect: Located in the "Event Programming" screen's "Tools" pull down menu. This feature allows you to select the PC Com port the **CTG-2** is connected to for On Line programming of the **CTG-2**. This is normally used if you are programming "Off Line" (**CTG-2** not connected to PC) then want to connect to the unit and upload the updated programming data.

Change Unit Name: Located in the "Event Programming" screen "Tools" pull down menu, this is useful if you have several units in multiple locations with the same "dat" file. For single unit applications we recommend using the "dat" file name for the unit name.

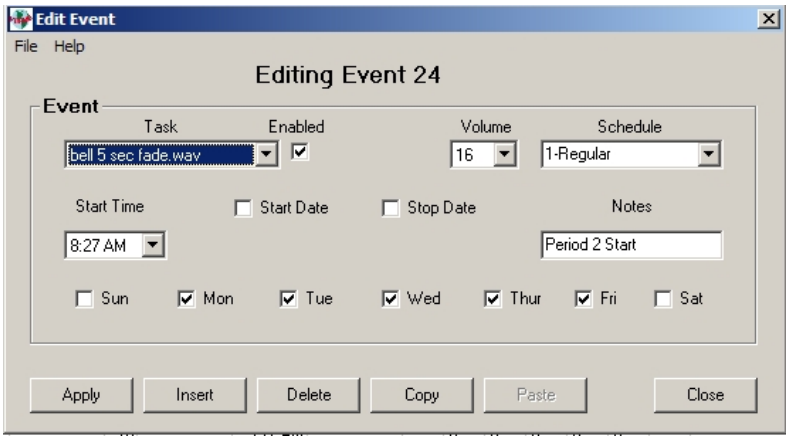


New File: Select this to open a new Event Programming dat file (right).

Open: Select this to open an existing Event Programming dat file (right).

Import: Select this when opening an existing Event Programming dat file that was previously programmed from a different PC (right).

Add/Edit Event: Add each of your events by double clicking on any field in the next available event (except the event number field). This opens the "Edit Event" screen that is used to program or edit the one specific event (below right). If using multiple schedules and you wish to copy a complete schedule, see "Block Edit" on page 12. If using multiple schedules and the Calendar mode, you can disregard the "start date" and "stop date" when programming your events. Once all of your events and schedules are programmed, you can use the Calendar mode to decide which schedule is running each day and to disable tones on weekends, holidays, etc.



Task: This pull down menu allows you to program a specific event such as to play a preprogrammed (uploaded) wave file, Change Schedule, turn the Aux relay on or off, activate a timed Aux relay, activate an automatic Time Sync on a specific time and/or date or Start a System Disable/Enable at a specific time and/or date.

Time Sync: Located under "Task" pull down menu. This is for programming an automatic ACTS atomic clock synchronization event. This does require a phone line or an analog station port of a phone system on terminals 1 & 2. The CTG-2's internal clock accuracy is +/- 2ppm or approximately +/- 63 seconds per yr. This accuracy can be greatly increased by programming Time Sync events once per month, etc. We recommend programming the Time Sync Start Time for after hours and at an odd time to help prevent busy signals from ACTS or busy shared line issues.

Duration: For a timed Relay event, this box sets the length of time the auxiliary relay will be actuated.

Time Dly (sec): For an Aux Relay On or Off event, this box sets the length of delay time (0.5 to 59.5 sec) before the auxiliary relay will be turned on or off.

Start Date/Stop Date: The easiest way to program start and stop dates is to program them in the "Change Schedule" screen. The start and stop times cannot be programmed and are fixed to 12:00am. Start and stop dates can also be programmed in the event programming screen. Double click in the event row to open the "Edit Event" screen. The Start and Stop pull down menus allow you to program Start and Stop dates for that specific event. Example: You would like to let your employees off work an hour early during the week before Christmas. Simply program an even to play your normal 5:00 end of shift tone at 4:00 with start and stop dates for the week before Christmas.

Notes: This field in the "Edit Event" screen is useful for entering notes explaining what the event is signaling such as "Period 2 Start", "Lunch End", "Shift 3 Start", etc. The "Notes" field is only used for the convenience of the user and is stored in the PC dat file. The **CTG-2** does not make use of this information. ***Note:*** *The first character in the "Note" field should NOT start with a number as it will right justify the text.*

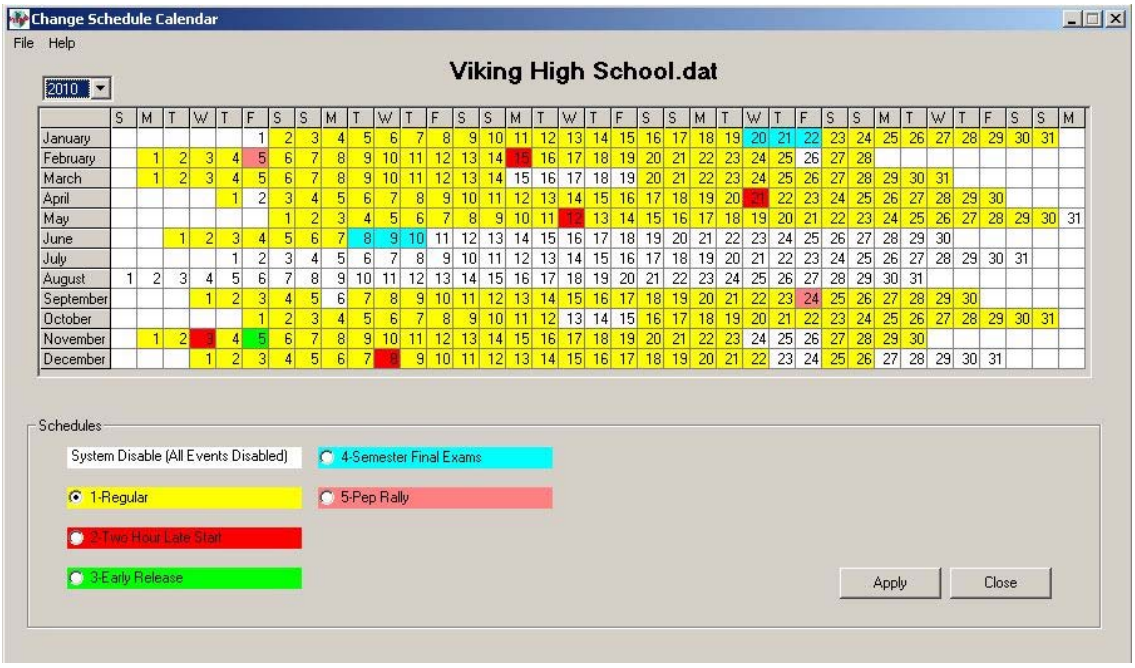
System Disable: This task allows you to program a specific date and/or time to disable all timed events. This is useful in schools for disabling all events during spring break, holidays, etc. Triggered inputs 1-4 will remain functional during "System Disable" times. ***Note:*** *If programmed using the "Change Schedule Calendar", start and stop times will take place at 12:00AM. If specific times other than 12:00AM are required, the "Edit Event" screen must be used. When the* ***CTG-2*** *is in the "System Disable" Mode, the LED display will state "dS".*

System Enable: If "System Disable" has been programmed via the "Edit Event" screen, a "System Enable" event can be programmed to re-enable the **CTG-2** to activate timed events.

Upload: Uploads all data from the current open PC screen to the **CTG-2**. ***Note:*** *Uploading from the main "Event Programming" menu will upload data from all programming screens to the* ***CTG-2*** *and automatically save data from all menus to the PC dat file.*

Download: Downloads internal programming data from the **CTG-2** to the PC screen you have open. ***Caution:*** *Download can be used for viewing but should not be used for editing as it does not contain information from the "Schedule" or "Notes" column of the Event Programming screen. All editing should be done by opening the dat file.*

Calendar Mode: If more than one schedule is programmed you can run the unit in the calendar mode. In the Calendar mode the **CTG-2** will automatically switch on/off and to different schedules per the dates programmed in the "Change Schedule Calendar". Schedule changes will take place at 12:00 AM. ***Note:*** *Multiple schedule changes on a particular day are not supported in calendar mode. Automatic schedule changes will be disabled if a start time of other than 12:00am is selected.*



Calendar: Clicking the "Calendar" button in the "Event Programming" screen will open the "Change Schedule Calendar" programming screen where you can select which schedule you would like the **CTG-2** to run on which days during the year. This is programmable out to the year 2098 allowing you to program multiple years in advance if required. Simply select a preprogrammed schedule and click on the dates you would like that schedule to run. By clicking and highlighting, multiple dates can be changed at once. When utilizing the "Change Schedule Calendar" schedule changes will take place at 12:00 AM. ***Note:*** *Schedules must be programmed in the "Event Programming" menu first, then the schedules can be programmed for specific dates utilizing the "Change Schedule Calendar".*

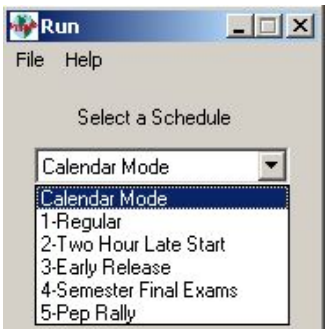
Manual Schedule Changes (versus Calendar mode): You are allowed to program your own schedule changes instead of using the calendar mode that automatically creates schedule changes for you. You then program the schedule changes as events, specify the schedule you are changing to and the start and stop dates for this schedule change. Additional information about manual schedule changes:

1. Multiple schedule changes on a particular day are not supported.

2. The start and stop times for all manual schedule changes is fixed at midnight and cannot be changed. The "Start Time" field on the "Edit Event" screen is grayed out (not available) when programming a schedule change event.

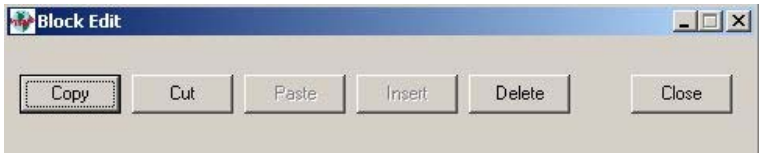
3. When all programming is completed (and uploaded to the **CTG-2**) and you are ready to start the unit running, run the **CTG-2** in the calendar mode. The **CTG-2** will only follow schedule change events when running in the calendar mode.

Run: Click this button to exit PC programming and place the **CTG-2** in run mode. Simply press the "Run" button, select the desired schedule or Calendar mode and press "Start". ***Note:*** *If you are starting the CTG-2 during a preprogrammed time for "System Disable" or "Aux Relay On", check the appropriate boxes then click "Start".*

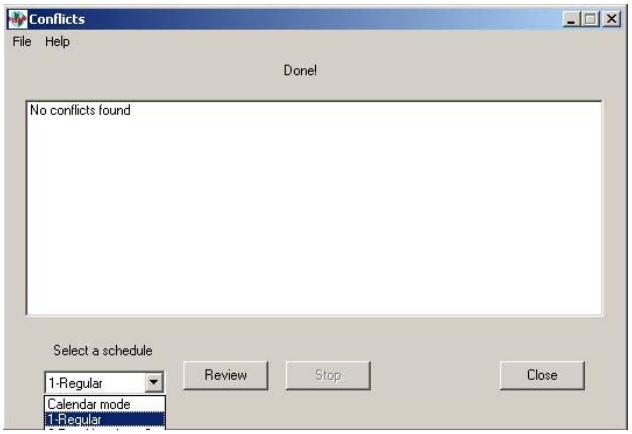


Exit: Clicking "Exit" with a dat file open will prompt you "Do you want to start running?" Selecting "Yes or No" will exit and close the **CTG-2** programming software. If "no" was selected the **CTG-2** will display "OFF" and will not activate any programmed events. The 4 trigger inputs will remain functional. If "Yes" was selected the "Run" menu will appear allowing you to select the "Calendar Mode" or any preprogrammed schedule. Click on "Start" and the **CTG-2** will begin running the selected schedule.

Block Edit: Screen opens after single clicking in the Event row. By clicking and highlighting, entire blocks of events can be selected. This is used to Copy, Cut, Paste, Insert or Delete single or multiple Event rows. This can be useful for copying an entire schedule then modifying the event times slightly for early release, late start, etc. (right)

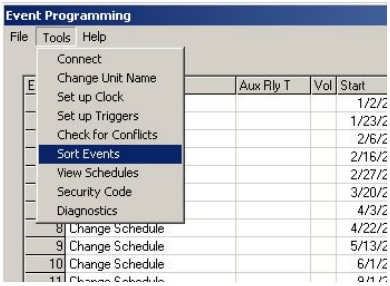


Conflicts: Clicking the "Conflicts" button will open the Conflicts screen where you can have the software review the programmed Events and Schedule changes in your dat file to determine date or time conflicts. This will also check for conflicts if a wave file is not finished playing before another event is scheduled to activate. When you have finished programming your dat file, click on "Conflicts", and select "Calendar Mode" or which schedule you would like to check for conflicts then click "Review". The "Conflicts" screen will display all the events with conflicts and the "Event Programming" menu will highlight the events with conflicts in yellow. Make corrections to the highlighted events then review conflicts again. (right) ***Note:*** *If using multiple schedules and calendar mode, check each schedule for conflicts first, then check calendar mode for conflicts.*

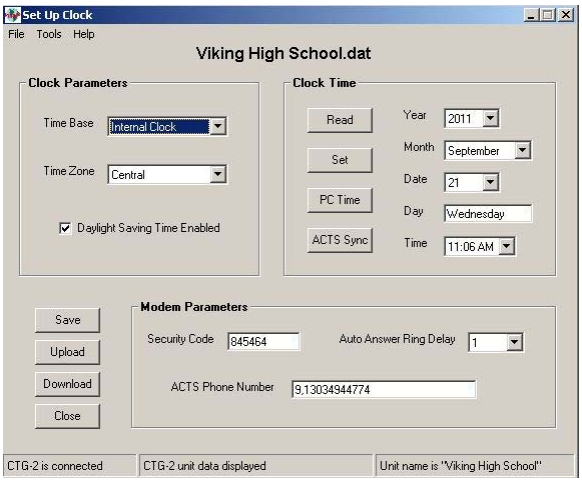


Sort Events: When you are finished programming all your events in your dat file, you can select this feature to automatically sort all of the events in chronological order starting with all your change schedules events for schedule 1. In the "Event Programming" screen select the "Tools" pull down menu and click "Sort Events" then click "Review". (right) ***Note:*** *The "Sort Events" feature is irreversible.*

Diagnostics: This section is password protected. Only access this area if directed to do so by Viking Technical Support personnel (this allows you to view firmware memory, factory clock calibration, etc.)



Set Up Clock: Clicking the "Clock" button will open the "Set Up Clock" programming screen where you can enter/program Clock Parameters such as Time base (Internal, 50 Hz or 60Hz), Time Zone and Set Clock (Manual, PC time or Sync to ACTS). Program Clock Time (Year, Month, Day, and Time) and Modem Parameters such as Security Code, Auto Answer Ring Delay (1-99) and ACTS Phone Number. ***Note:*** *It is recommended that you use the "Internal" time base which has an accuracy of 2 ppm (+/- 63 seconds per year). Additional accuracy can be achieved by programming periodic "Time Sync" events in the Event Programming screen. "AC Line 50 or 60 Hz" time base should only be used in legacy applications where the AC powered building clocks are synchronized to the AC line power frequency.* ***Note:*** *After changing the Time Base AC line frequency setting, momentarily power down the unit.*



Set: Clicking "Set" will upload the **CTG-2** with only the time and date parameters displayed in the "Clock Time" section of the "Set Up Clock" screen. ***Note:*** *Clicking "Upload" will send clock time and all other parameters in the "Set Up Clock" screen.*

Read: Clicking "Read" will display the current internal **CTG-2** clock time and date.

Time Base: In the "Set Up Clock" screen, click this pull down menu to select the **CTG-2**'s time base. With "Internal Clock" selected the **CTG-2** will base its time off its internal crystal controlled (quartz) real time clock with an accuracy of approximately 2 ppm which is +/- 63 seconds per year without atomic clock sync. ***Note:*** *This accuracy can be greatly increased with periodic Atomic Clock Synchronization or periodic manual clock corrections.* With AC Line 50 or 60 Hz selected the **CTG-2** will base its time off the AC voltage powering the unit. The clock accuracy will then follow the power company fluctuations. This can be useful for matching the **CTG-2** time to existing AC powered clocks.

Time Zone: Clicking this pull down menu will allow you to select the correct time zone for your region.

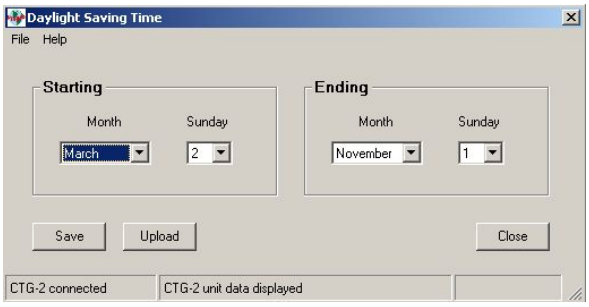
Set Clock: Clicking this pull down menu will allow you to select the method used for setting the **CTG-2**'s internal clock. Selecting "Manual" will allow you to manually adjust the time and date parameters then click "Set" or "Upload" to set the time and date in the **CTG-2**'s internal memory. Selecting "Use PC Time" will load the current time and date from your PC into the "Clock Time" parameters then click "Set" or "Upload" to set the time and date in the **CTG-2**'s internal memory. Selecting "Sync to ACTS" will allow you to force an Atomic Clock Sync from your PC by clicking "Set" or "Upload". This process will take approximately 30 seconds. The current time and date will then be loaded into the **CTG-2** and displayed under "Clock Time".

ACTS Phone Number: "ACTS" is the abbreviation for "Automated Computer Time Service" provided by NIST (National Institute of Standards and Technology). This field is factory loaded with the typical phone system line access number 9 and a comma (1 sec pause) then 1 and the 10 digit number for the ACTS. This number can be user programmed with up to 50 digits, allowing the use of calling cards, etc. to reduce long distance charges. The telephone number for ACTS is: 1-303-494-4774.

ACTS Sync: Clicking "ACTS Sync" will activate a forced Atomic Clock Sync. The internal modem in the unit will seize the phone line, speed dial ACTS and download the current time and date. This process will take approximately 30 seconds. The current time and date will then be loaded into the **CTG-2** and displayed under "Clock Time". ***Note:*** *Unit must be connected to a phone line or analog phone system station port for the Atomic Clock Sync.*

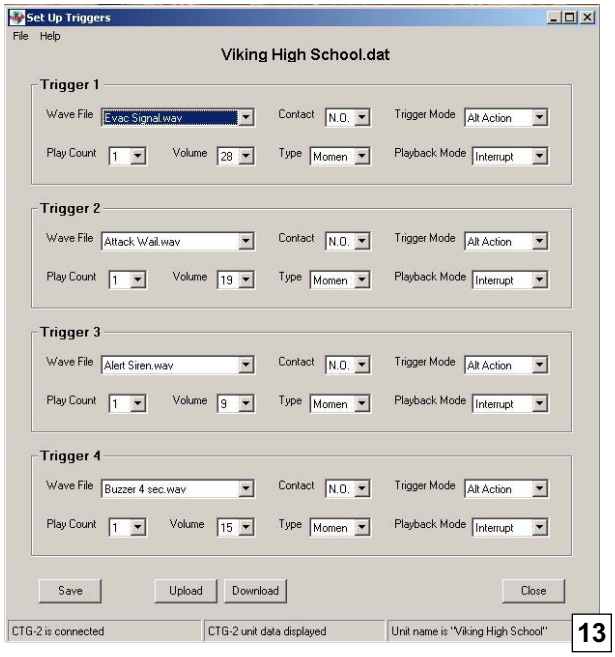
Security Code: This is a programmable 6 digit touch tone code for entering remote touch tone programming. This code is to be entered after the **CTG-2** has answered the line and given a confirmation beep. ***Note:*** *If your application does not require a security code, the security code can be disabled by programming "000000" in the security code field under "Modem Parameters." With the security code disabled, the* ***CTG-2*** *will answer an incoming call and give 2 beeps indicating you have entered touch tone programming.*

Daylight Savings Time Enabled: Check this field to enable automatic daylight savings time correction. The **CTG-2**'s internal clock will then be advanced 1 hour at 2:00 AM of the Starting Sunday and dropped back 1 hour at 2:00 AM of the Ending Sunday.



Daylight Savings Time: In the "Tools" pull down menu. This screen allows you to program the starting and ending month and Sunday for the automatic change to Daylight Saving Time. Use the pull down menus to select the starting and ending month and Sunday then click "Upload" to send the data to the **CTG-2**. The **CTG-2**'s internal clock will then be advanced 1 hour at 2:00 AM of the Starting Sunday and dropped back 1 hour at 2:00 AM of the Ending Sunday. (top right)

Triggers: Clicking the "Triggers" button in the "Event Programming" section will open the "Set Up Triggers" programming screen where you can enter/program the parameters for Trigger Inputs 1-4 such as which wave file to play, Contact (N.O./N.C.), Trigger Mode (Alt Action/Activate Only), Play Count (1-99 or Continuous), Volume setting, Type (Mom / Cont) and Playback Mode (Interrupt/stack). ***Note:*** *The* ***CTG-2*** *is factory loaded with the following wave files for Trigger Inputs 1-4:*



Trigger 1: Evac Signal.wav (ANSI S3.41/ISO 8201 Audible Emergency Evacuation Signal)

Trigger 2: Attack Wail.wav

Trigger 3: Alert Siren.wav

Trigger 4: Buzzer 4sec.wav

Push Button Programming

The push buttons on the front of the CTG-2 are limited to allow you to program only the following functions: Set time, Set Schedule, Force an Atomic Clock sync, Turn the unit ON (RUN) or OFF and exit and Run. See PC programming for all other functions.

MODE Switch

Press this to cycle through the following modes “RUN”, “SET TIME”, “SET SCHEDULE” and “FORCE TIME SYNC”. LED’s above the display will light indicating which mode the unit is in.

+/- TIME Switches

RUN Mode: Press the “-“ button to place the unit in the OFF mode. Press the “+” button to place the unit in the RUN mode. ***Note:*** *When the* ***CTG-2*** *is in the OFF mode, programmed events will not be transmitted. Unit will display “OFF”, the internal clock will continue to run and the 4 trigger inputs will remain functional.*

SET TIME Mode: Use “+/-“ buttons to increment or decrement clock time.

SET SCHEDULE Mode: Use “+/-“ buttons to select a schedule or Calendar mode (CAL). ***Note:*** *If you select a specific schedule through the PC software or push button programming, the* ***CTG-2*** *will only run that schedule and will not change schedules until another schedule or calendar mode is programmed (any schedule change events are ignored).*

Display	Description
CdS	Unit is in Calendar mode but is currently in “System Disable” (example: spring break, summer break, etc.)
C01-C14	Unit is in Calendar mode and currently running schedule shown.
01-14	Unit is **NOT** in calendar mode and will only run the schedule shown.
CAL	Displayed when setting unit in the calendar mode.
Snc Err	Displayed when the **CTG-2** is unable to synchronize with “ACTS”. See Forced Time Sync Mode below.
CAL Err	Displayed when the **CTG-2** has lost power for over 4 hours and has dates or daylight savings time programmed. This can be corrected with a “Forced Time Sync” (see below) or enter PC programming and reprogram the clock in the “Set Up Clock” screen (see page 12).
dS	Displayed when the **CTG-2** is in the “System Disable” mode (see “System Disable” page 11).
OFF	Displayed when the **CTG-2** is in the “Off” mode. In the “Off” mode, the **CTG-2** will not play or activate any programmed events. ***Note:*** *The 4 trigger inputs will remain functional for emergency signaling, etc.*
Pro	Displayed when the **CTG-2** is in “PC Programming” (USB port is connected to a PC and **CTG-2** programming software is opened). In the “Pro” mode, the **CTG-2** will not play or activate any programmed events. ***Note:*** *The 4 trigger inputs will remain functional for emergency signaling, etc.*
Snc	Displayed when the **CTG-2** is in the “Time Sync” mode.

FORCE TIME SYNC Mode: Press the “+” button to initiate a “Forced Time Sync” to the Atomic Clock (ACTS). The internal Modem in the unit will then seize the phone line, speed dial ACTS and down load the current time and date. This process will take approximately 30 seconds in which time the unit will flash “Snc” on the clock display. The default phone number to perform a sync is “**9** (1 second pause) **13034944774**”. This is programmed on the “Set Up Clock” screen. ***Note:*** *Unit must be connected to a phone line or analog phone system station port for time sync.*

If the **CTG-2** was unable to sync with ACTS the display will flash “Snc”, the current time, then “Err”. If this happens, check to make sure a phone line or analog station port of a phone system is connected to J2 terminals 1&2 (CO Line Input). Test the phone line with a standard telephone or test set to verify you can call ACTS and hear modem carrier tones. Then go into PC programming under “Set Up Clock” and verify the correct number is programmed in the “ACTS Phone Number” location.

Touch Tone Programming

The **CTG-2** has limited Touch Tone programming allowing you to call the unit remotely and program the following functions: Turn unit ON or OFF, Select a Schedule or Calendar mode or Force a Time Sync.

Accessing the Programming Mode Remotely

Step 1. Call into the **CTG-2** from a touch tone phone.
Step 2. The **CTG-2** will automatically answer and provide 1 beep.
Step 3. Enter the 6-digit security code (factory set to 845464, see PC Programming section).
Step 4. A double beep will indicate that you have accessed the programming mode. ***Note:*** *If the double beep is not heard, wait a minimum of 3 seconds and re-enter the security code in a slow deliberate fashion.*
Step 5. *You can now touch tone program the features listed below.*

Note: *Enter touch tones slow and deliberate, waiting a minimum of 1 second between command entries. Programming from a cell phone may not be suitable in areas with weak coverage.*

Touch Tone programming commands:

Turn unit ON ..... **#1**
Turn unit OFF ..... **#0**
Hang up ..... **#4**
Force a Time Sync ..... **#8**
Reset trigger inputs 1 - 4 ..... **#9**
Select Schedule 1 – 14 ..... **1 - 14 then enter #7**
Select Calendar Mode ..... **99 then enter #7**

Confirmation beeps: Two beeps will be heard indicating a correct entry. Three beeps will be heard indicating an incorrect entry (error) or 3 seconds has elapsed since the last partially entered touch tone command. If this happens, simply re-enter the command slowly and deliberately. The **CTG-2** has a 20 second inter digit Touch Tone time out. If you exceed 20 seconds between Touch Tone entry the unit will output 3 beeps and hang up. ***Note:*** *Slow deliberate touch tone entry is recommended.*

Force a Time Sync: After entering "#8" two beeps will be heard, the unit will drop the line and then initiate a "Forced Time Sync" to the Atomic Clock (ACTS). The internal Modem in the unit will seize the phone line, speed dial ACTS and down load the current time and date. This process will take approximately 30 seconds in which time the unit will display "Pro" on the clock display. The default phone number to perform a sync is "**9** (1 second pause) **13034944774**". This is programmed on the "Set Up Clock" screen. If the **CTG-2** was unable to sync with ACTS the display will rotate between flashing the clock time, "Snc" and "Err". The unit will then redial every 5 minutes until it has a successful sync or reaches a maximum call attempt of 15. If the unit was unable to sync after 15 attempts, the display will continue to rotate between flashing the clock time, "Snc" and "Err".

Reset Trigger Inputs 1-4: Tones / messages (wave files) started from trigger inputs 1-4 can be reset (stopped) remotely from a touch tone phone. Simply access the programming mode (see steps 1-4 above) and enter "**#9**". A double beep should be heard. Trigger inputs 1-4 will then be reset (stopped). The trigger input's contact closure will then require an "open" before the next trigger (contact closure) can activate the tone / message (wave file).

Operation

After all PC programming is completed, saved to the dat file and uploaded to the **CTG-2**, you can now exit programming and place the unit in the "RUN" or "OFF" mode. To exit PC programming and place the unit in the RUN mode click on "RUN" in the "Event Programming Screen", select "Calendar Mode" (automatically switches schedules per Calendar programming) or select which specific "Schedule" you would like the **CTG-2** to run. If you select a specific schedule the **CTG-2** will only run that schedule and will not change schedules until reprogrammed. The **CTG-2** will now display the current time with a flashing colon and light the "RUN" LED. When placed in the "RUN" mode the **CTG-2** is now ready to play and/or activate the next scheduled event*.

To exit PC programming and place the unit in the "OFF" mode click on "Exit" in the "Event Programming Screen" then click "NO". This will close PC programming and place the **CTG-2** in the "OFF" mode. The unit's clock display will display "OFF". With the **CTG-2** in the "OFF" mode the unit will not play or activate any programmed events. The 4 trigger inputs will remain fully functional for emergency signaling, etc. The unit can be placed back into the "RUN" mode via Push Button programming, PC programming or Touch Tone programming.

***Note:** Only one wave file event can be played per minute but the **CTG-2** can change a schedule, play a wave file and activate the Aux relay at the same programmed time.*

If you select a specific schedule through the PC software or push button programming, the **CTG-2** will only run that schedule and will not change schedules until another schedule or calendar mode is programmed (any schedule change events are ignored).

Auxiliary Relay Operation

The auxiliary relay can be either timed or continuously activated through clock events. If the auxiliary relay is currently activated (because of an event) and AC power is lost even momentarily, the auxiliary relay will no longer be activated when power is restored. If this type of operation is not desirable, a UPS is recommended for the **CTG-2** power.

If the auxiliary relay is currently activated (because of an event) and you connect with the **CTG-2** for PC programming, the "Aux Relay On" checkbox on the "Run" screen must be checked when finished programming or the auxiliary relay will be deactivated when you exit the PC software. If the "Aux Relay On" checkbox is already checked on the "Run" screen, the auxiliary relay was activated when you entered PC programming.

Compatible Products

Wireless Analog / Digital Clocks and Accessories

See DOD# 466 for more info

Viking's Wireless Clock System provides reliable, accurately synchronized clocks for your entire facility. Eliminating dedicated clock wiring can save you thousands of dollars on installation and also allows for easy retrofitting of an existing installation. While most wireless systems are limited to the range of the transmitter, Viking's system is not. Each clock acts as a Repeater (transceiver), meaning the secondary clocks both receive and retransmit the signal, maximizing signal transmission distances. The system is comprised of a **CTG-2** master clock, a **CL-RFT** clock RF transmitter and Analog or Digital wireless slave clocks. Working on Viking's 915-928MHz frequency hopping technology eliminates interference with other wireless products and requires no FCC license, eliminating extraneous fees. The received signal remains strong even under the effects of noise, obstructions or long distances which tend to decrease the signal to noise ratio. Installation is a cinch for our wireless clocks, just insert the batteries or connect power and hang them. That's it.

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